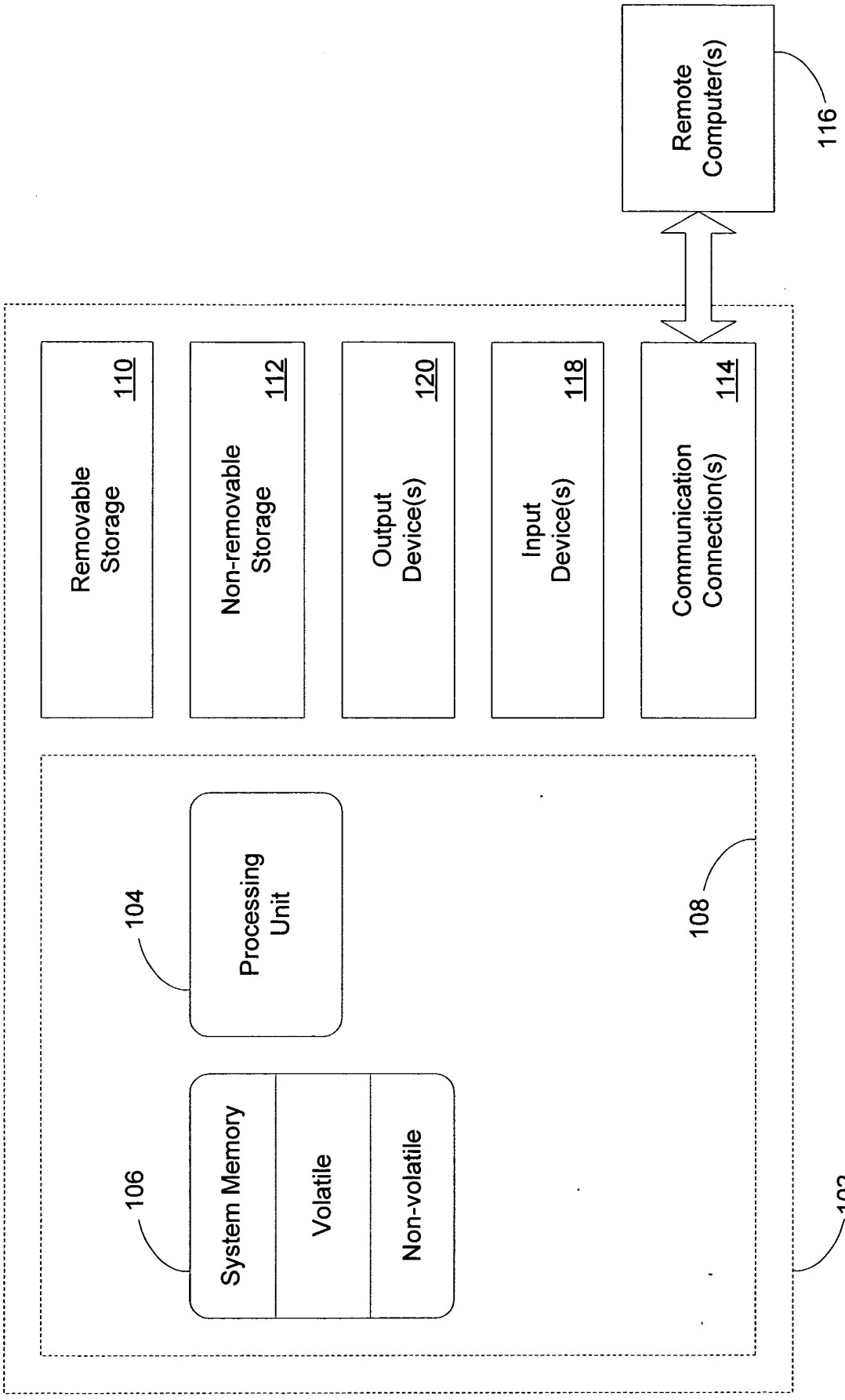
Remote Computer(s)
116
Removable Storage
110
Non-removable Storage
112
Output Device(s)
120
Input Device(s)
118
Communication Connection(s)
114
Processing Unit
104
108
System Memory
106
Volatile
Non-volatile
102

FIG. 1

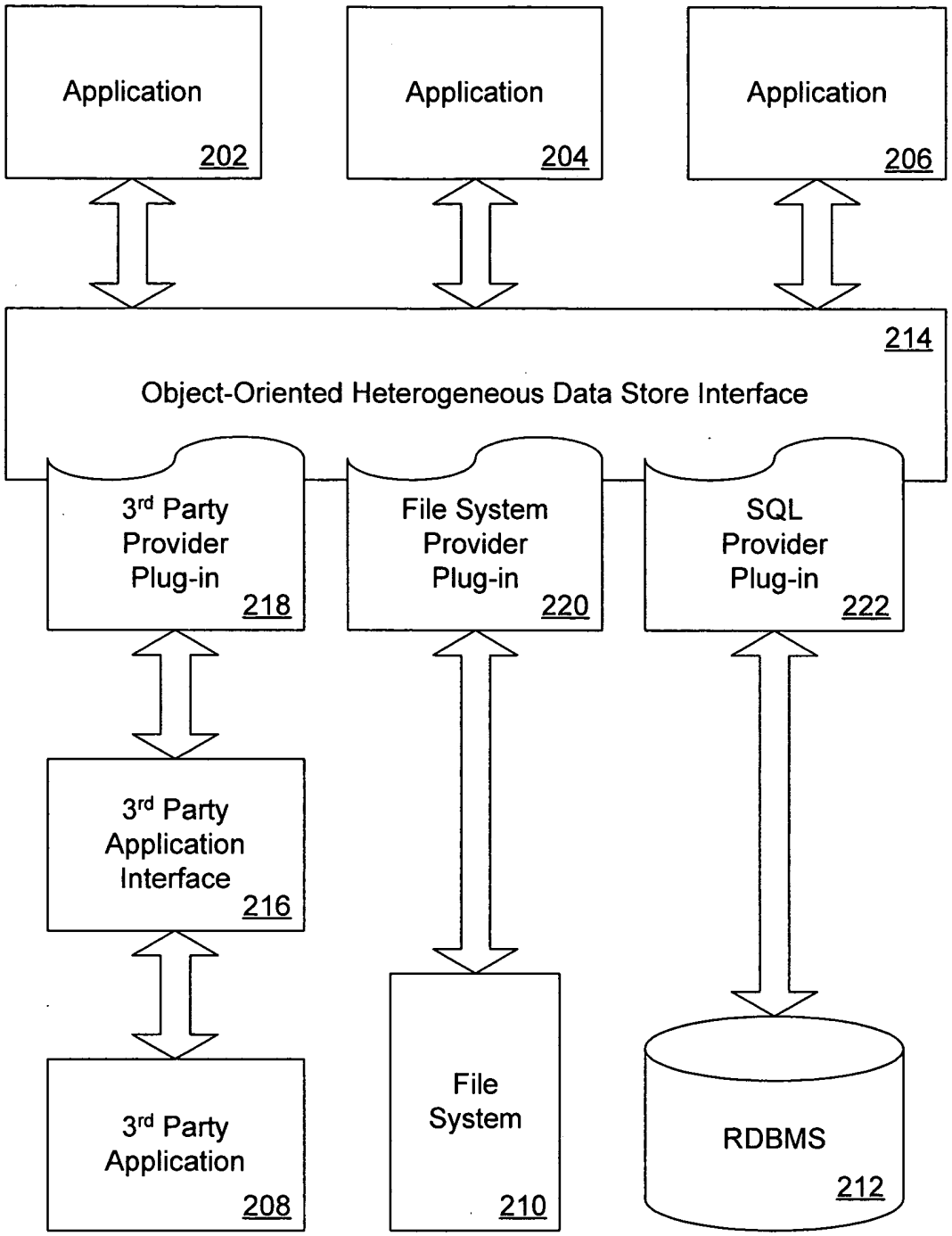
Application
202
Application
204
Application
206
214
Object-Oriented Heterogeneous Data Store Interface
3rd Party Provider Plug-in
218
File System Provider Plug-in
220
SQL Provider Plug-in
222
3rd Party Application Interface
216
3rd Party Application
208
File System
210
RDBMS
212

FIG. 2

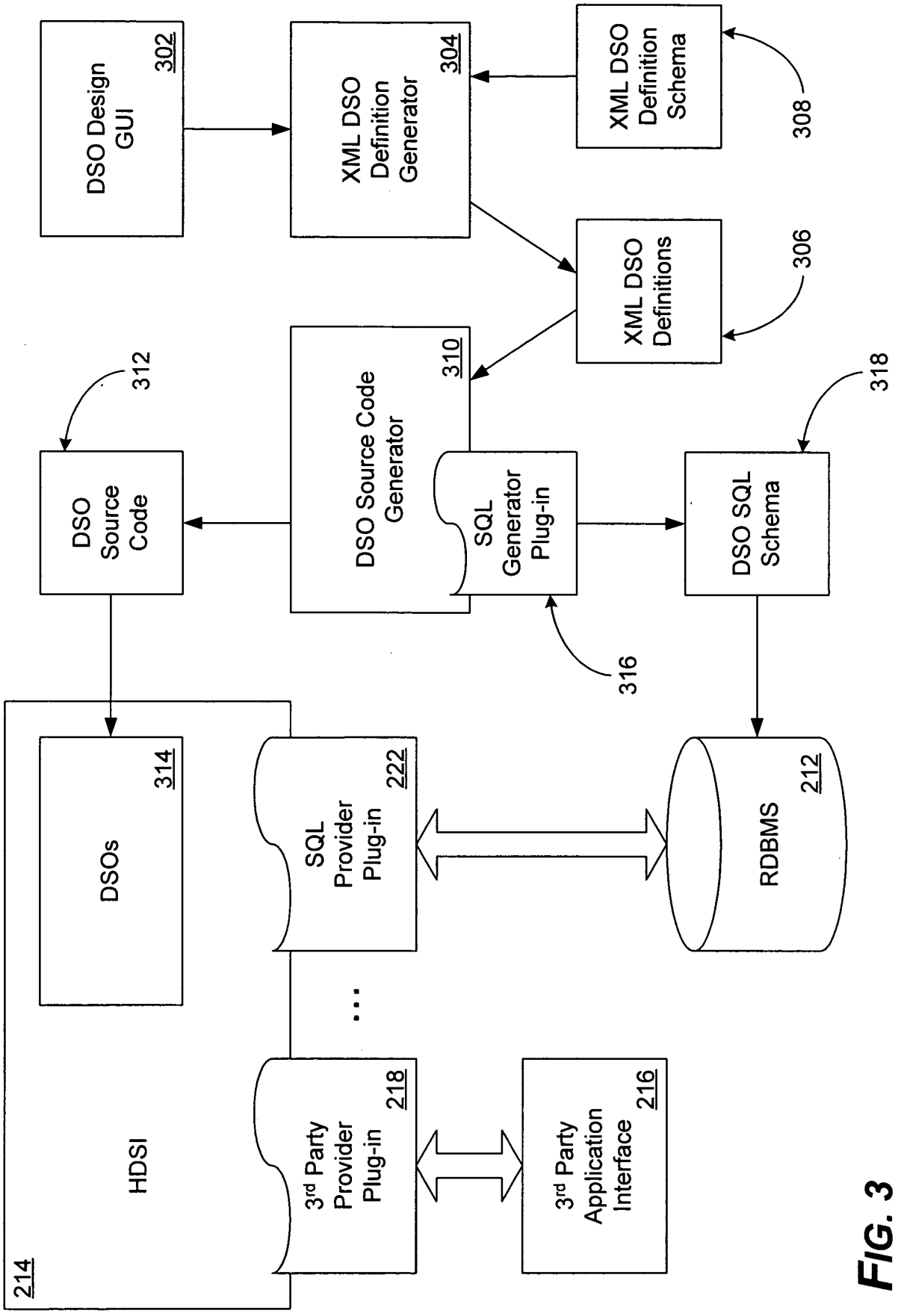
DSO Design GUI
302
XML DSO Definition Generator
304
XML DSO Definition Schema
308
XML DSO Definitions
306
DSO Source Code Generator
310
312
DSO Source Code
SQL Generator Plug-in
316
318
DSO SQL Schema
DSOs
314
SQL Provider Plug-in
222
RDBMS
212
3rd Party Provider Plug-in
218
3rd Party Application Interface
216
HDSI
214

FIG. 3

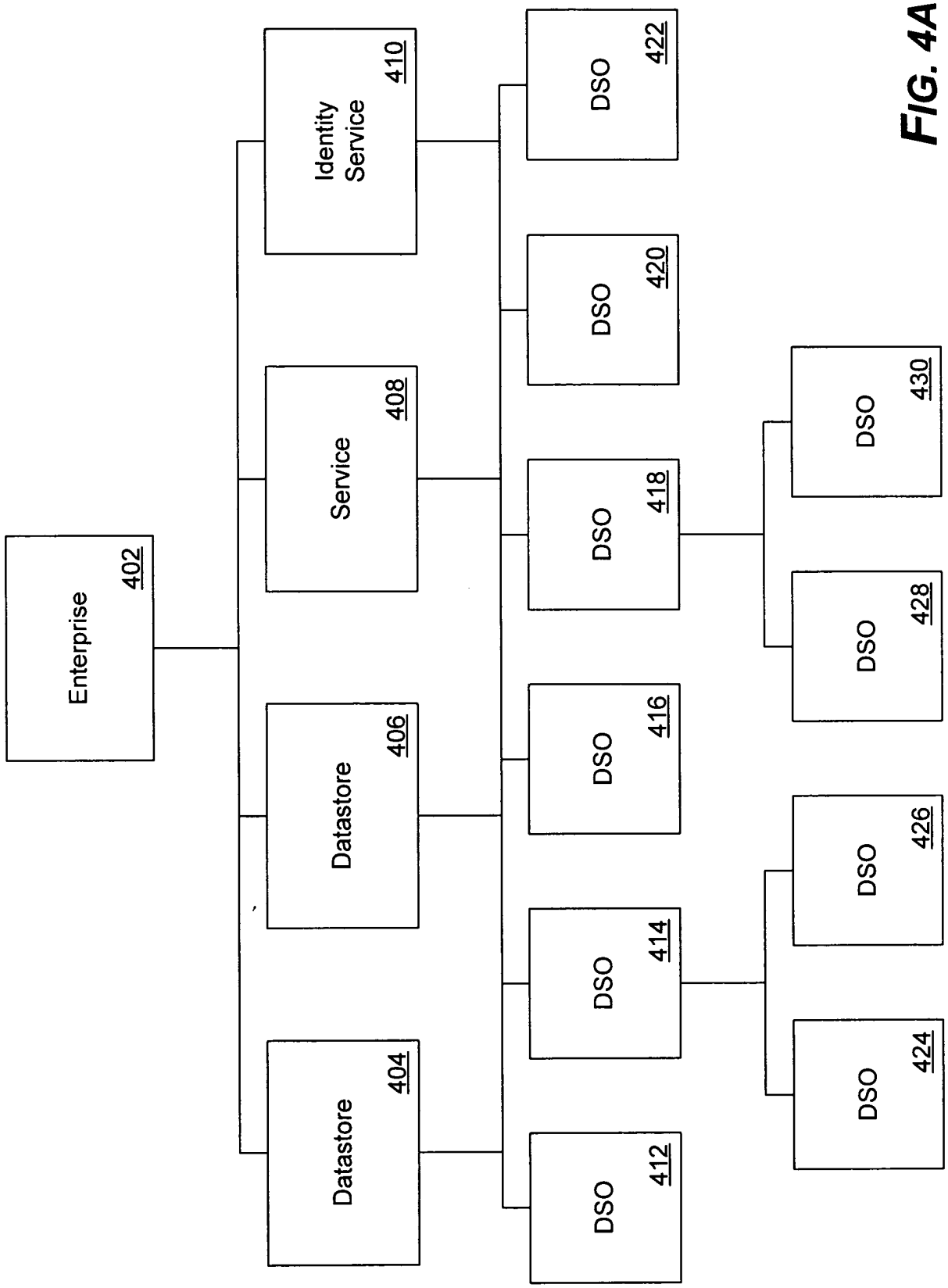
Enterprise 402
Identity Service 410
Service 408
Datastore 406
Datastore 404
DSO 422
DSO 420
DSO 418
DSO 416
DSO 414
DSO 412
DSO 430
DSO 428
DSO 426
DSO 424

FIG. 4A

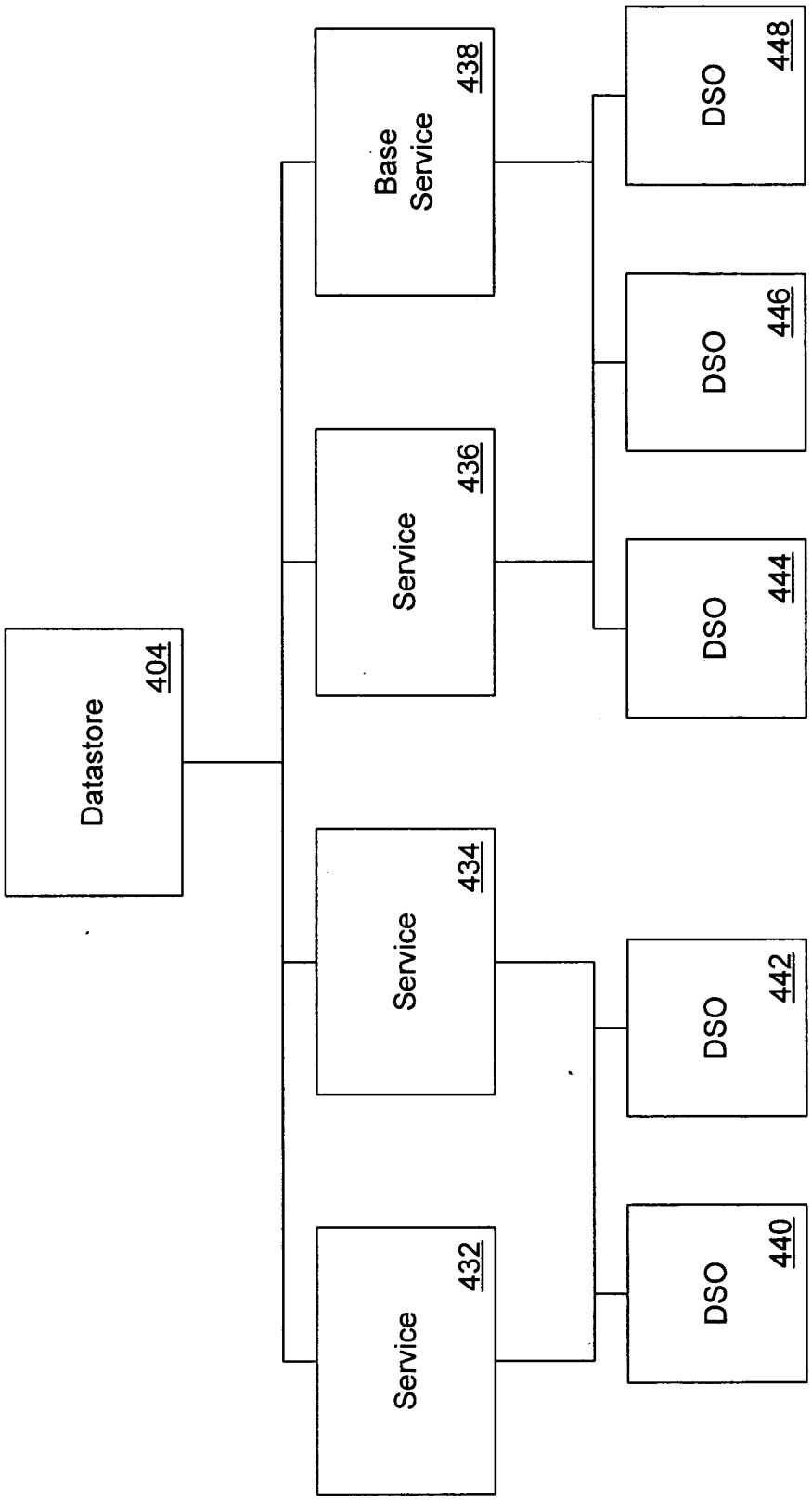
Datastore
404
Service
432
Service
434
Service
436
Base Service
438
DSO
440
DSO
442
DSO
444
DSO
446
DSO
448

FIG. 4B

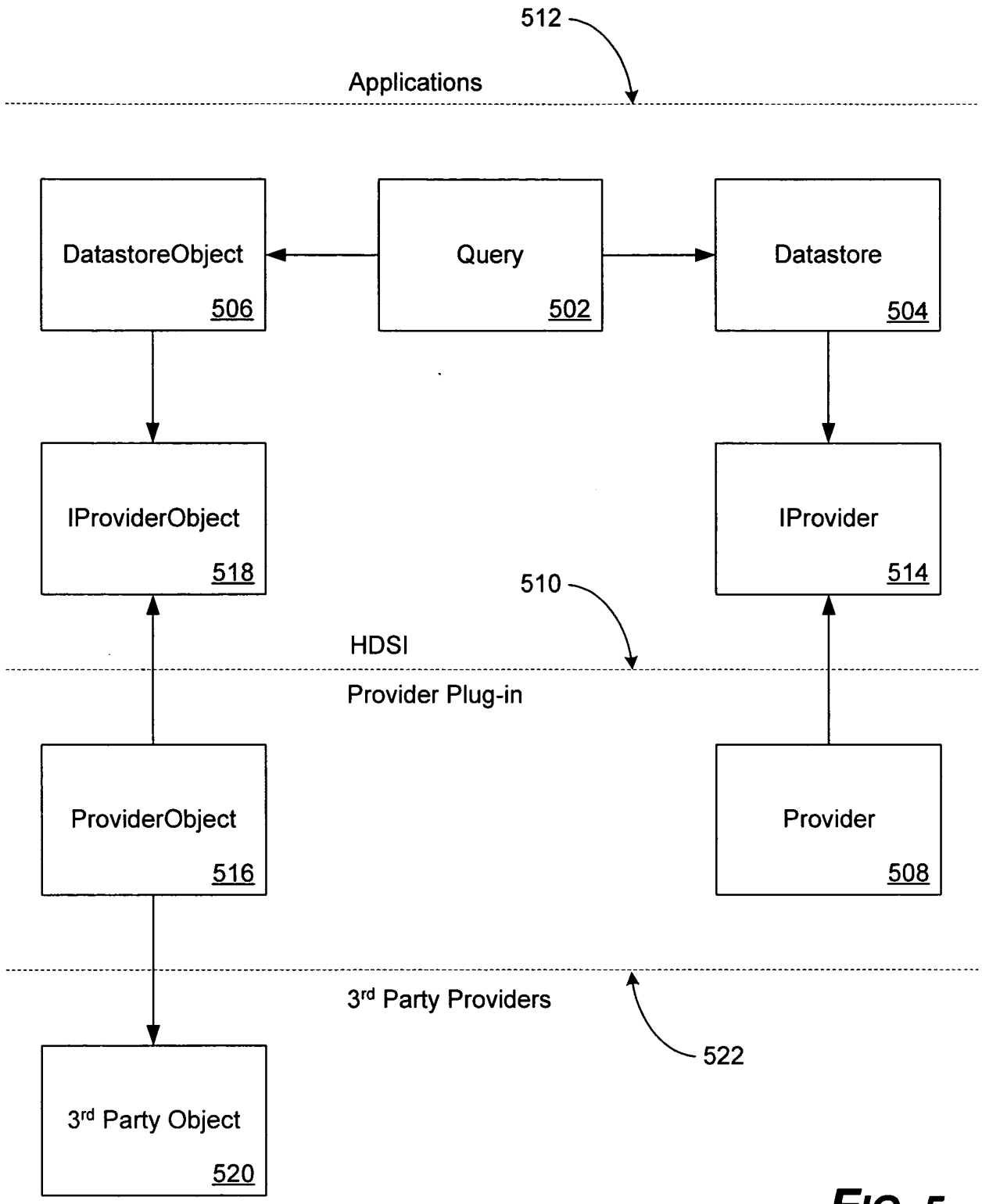
512
Applications
DatastoreObject
506
Query
502
Datastore
504
IProviderObject
518
IProvider
514
510
HDSI
Provider Plug-in
ProviderObject
516
Provider
508
3rd Party Providers
522
3rd Party Object
520

FIG. 5

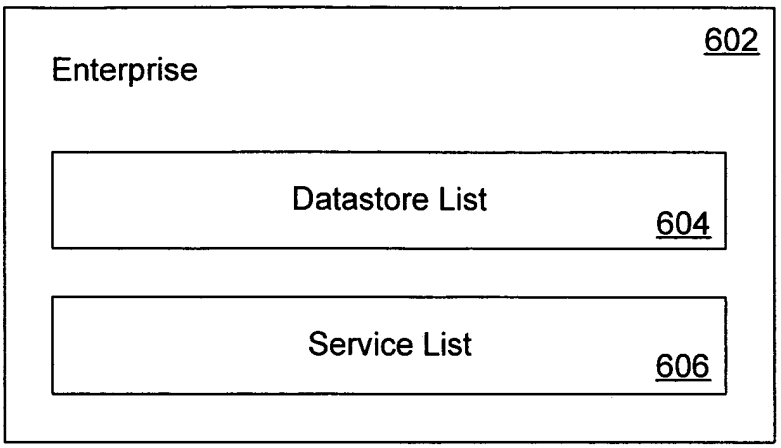
602
Enterprise
Datastore List
604
Service List
606

FIG. 6

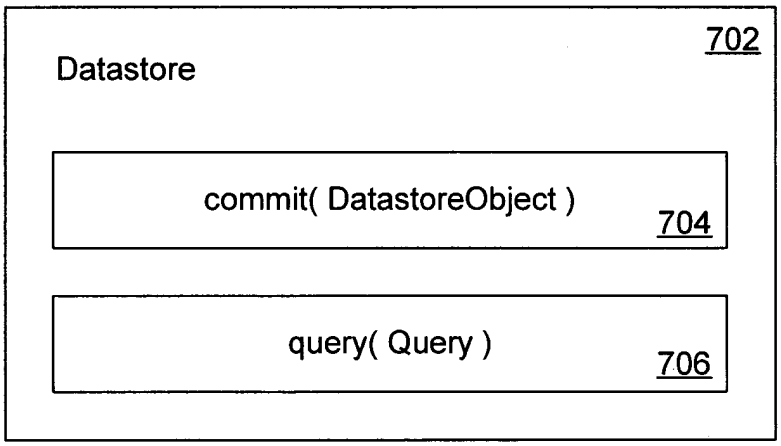
702
Datastore
commit(DatastoreObject)
704
query(Query)
706

FIG. 7

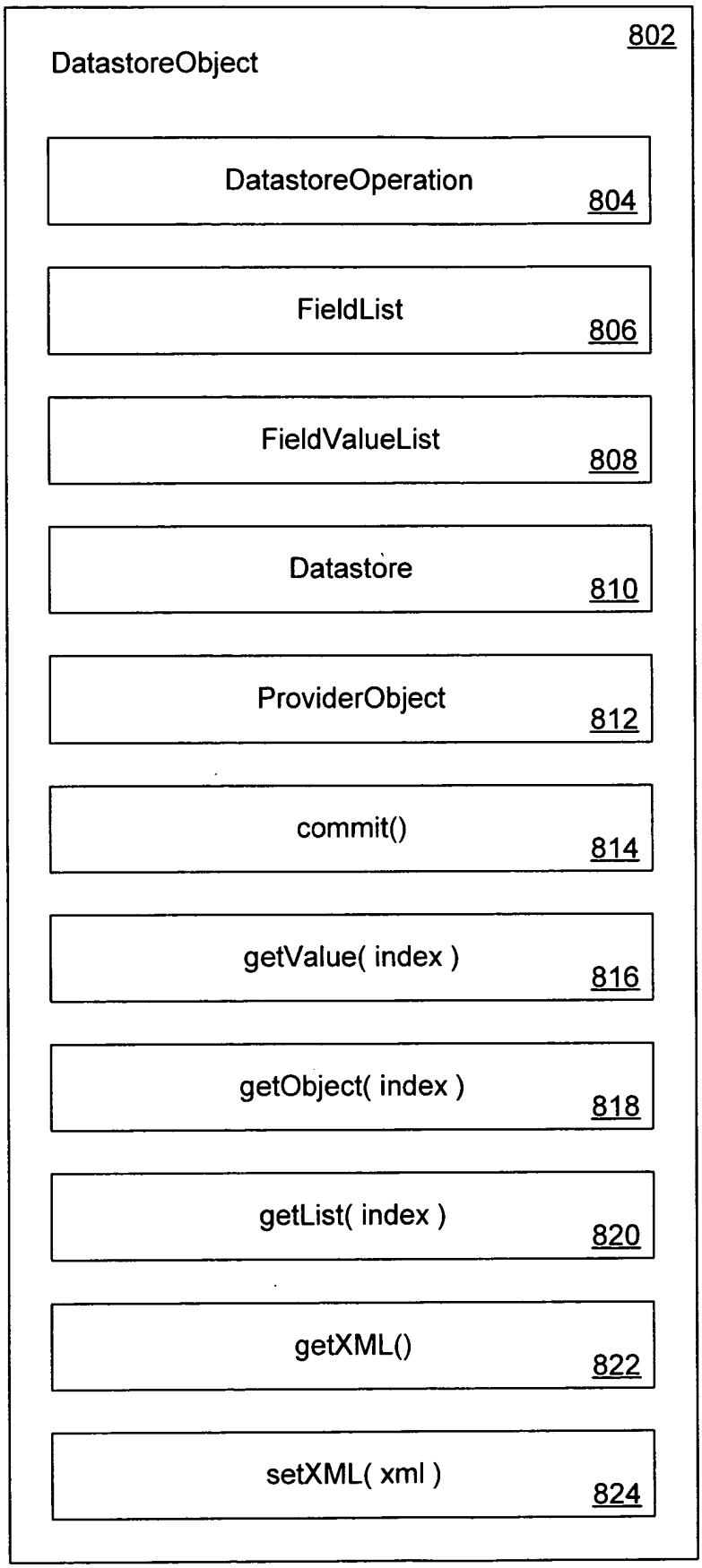
802
DatastoreObject
DatastoreOperation
804
FieldList
806
FieldValueList
808
Datastore
810
ProviderObject
812
commit()
814
getValue(index)
816
getObject(index)
818
getList(index)
820
getXML()
822
setXML(xml)
824

FIG. 8

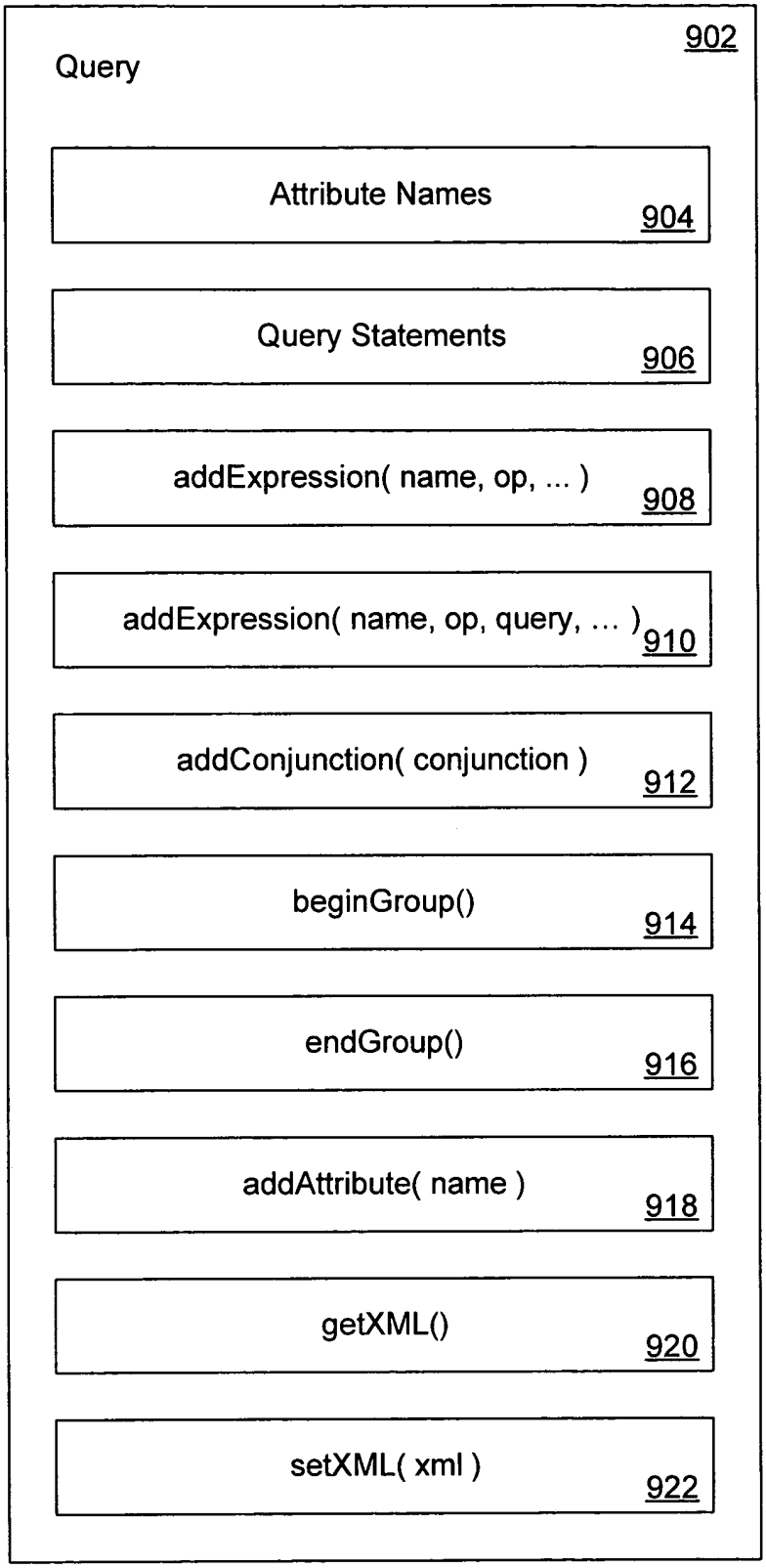
902
Query
Attribute Names
904
Query Statements
906
addExpression(name, op, ...)
908
addExpression(name, op, query, ...)
910
addConjunction(conjunction)
912
beginGroup()
914
endGroup()
916
addAttribute(name)
918
getXML()
920
setXML(xml)
922

FIG. 9

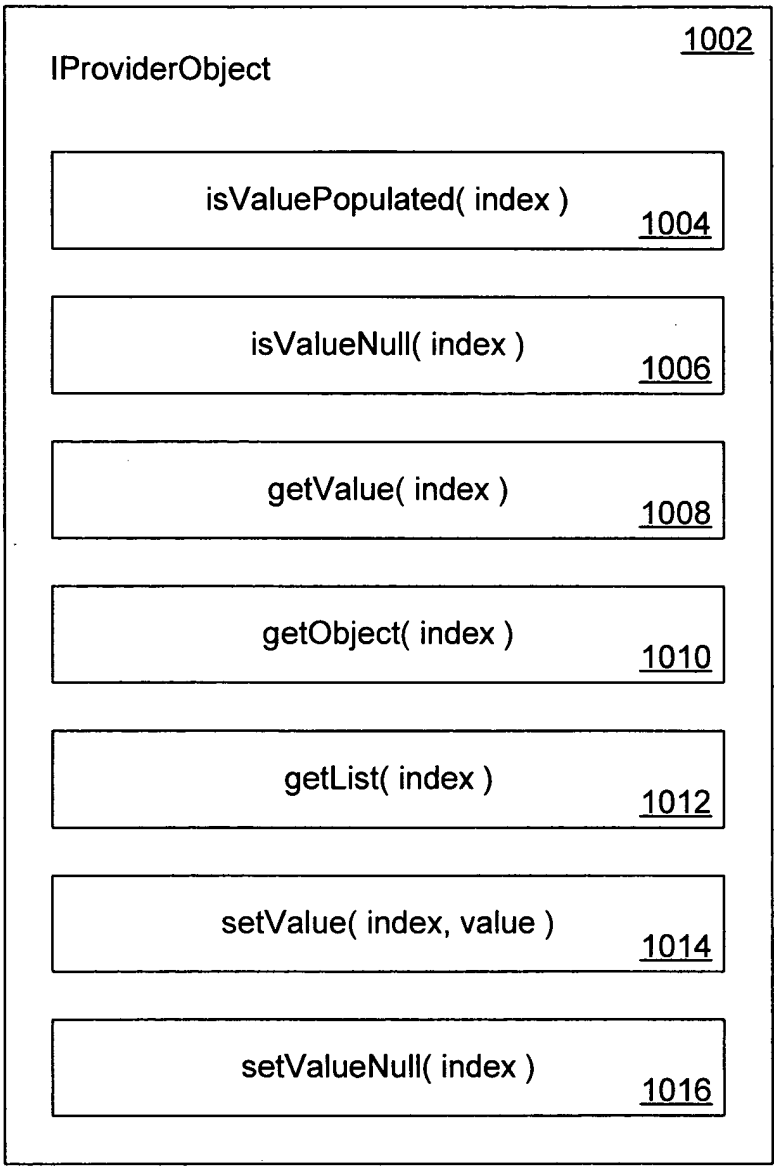
1002
IProviderObject
isValuePopulated(index)
1004
isValueNull(index)
1006
getValue(index)
1008
getObject(index)
1010
getList(index)
1012
setValue(index, value)
1014
setValueNull(index)
1016

FIG. 10

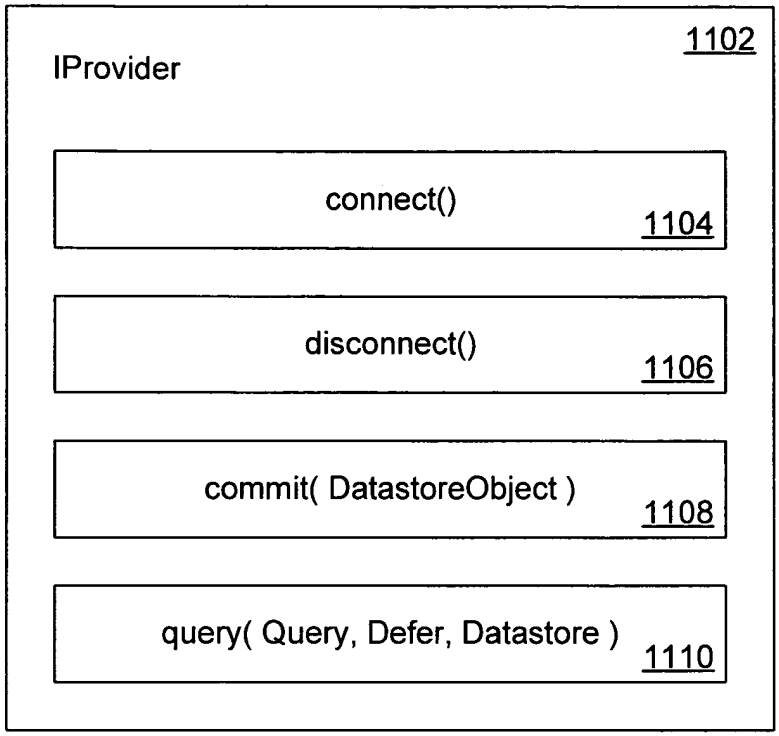
1102
IProvider
connect()
1104
disconnect()
1106
commit(DatastoreObject)
1108
query(Query, Defer, Datastore)
1110

FIG. 11

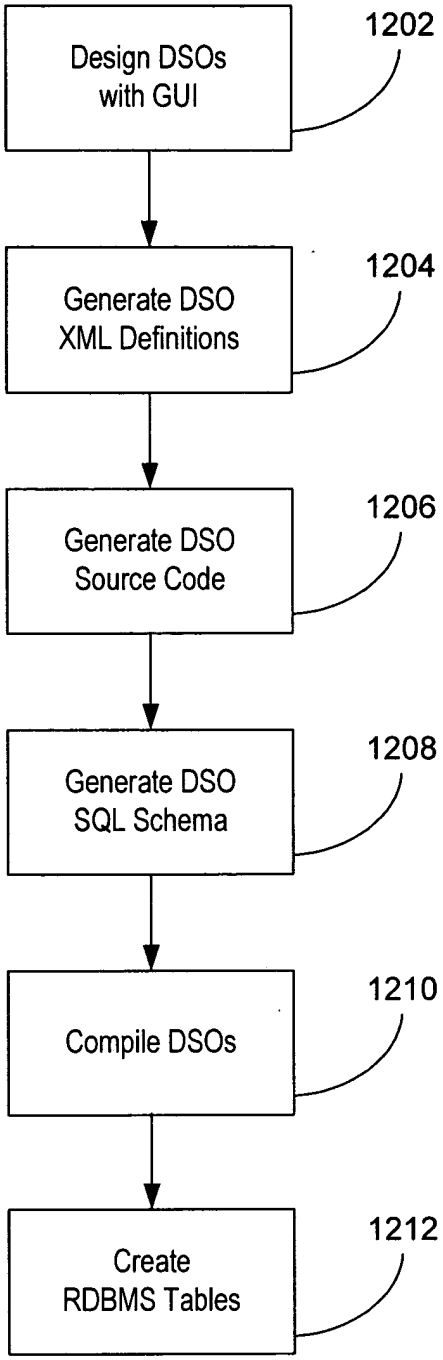
Design DSOs with GUI
1202
Generate DSO XML Definitions
1204
Generate DSO Source Code
1206
Generate DSO SQL Schema
1208
Compile DSOs
1210
Create RDBMS Tables
1212

FIG. 12

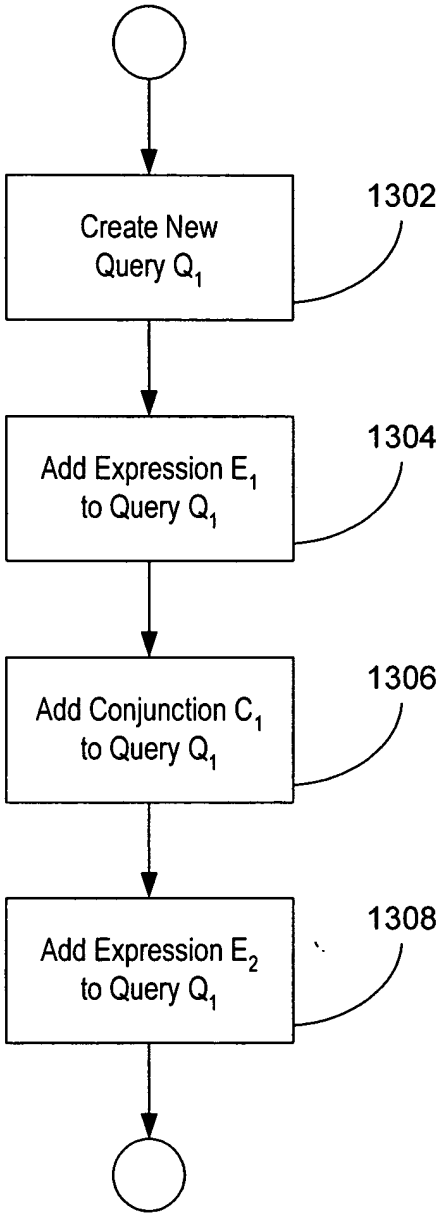
Create New Query Q_1
1302
Add Expression E_1 to Query Q_1
1304
Add Conjunction C_1 to Query Q_1
1306
Add Expression E_2 to Query Q_1
1308

FIG. 13

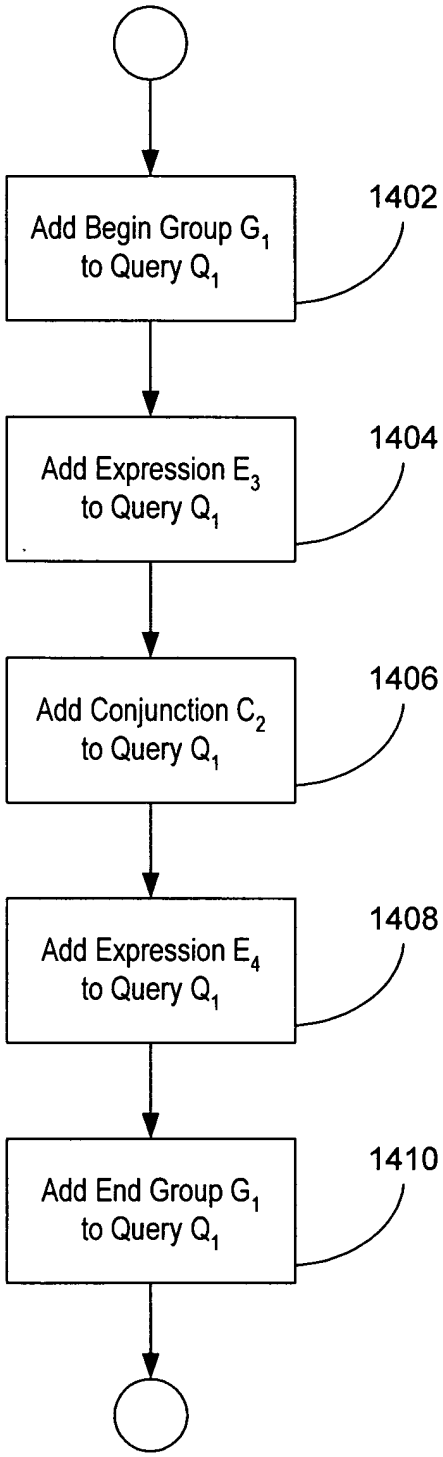
Add Begin Group G_1 to Query Q_1
1402
Add Expression E_3 to Query Q_1
1404
Add Conjunction C_2 to Query Q_1
1406
Add Expression E_4 to Query Q_1
1408
Add End Group G_1 to Query Q_1
1410

FIG. 14

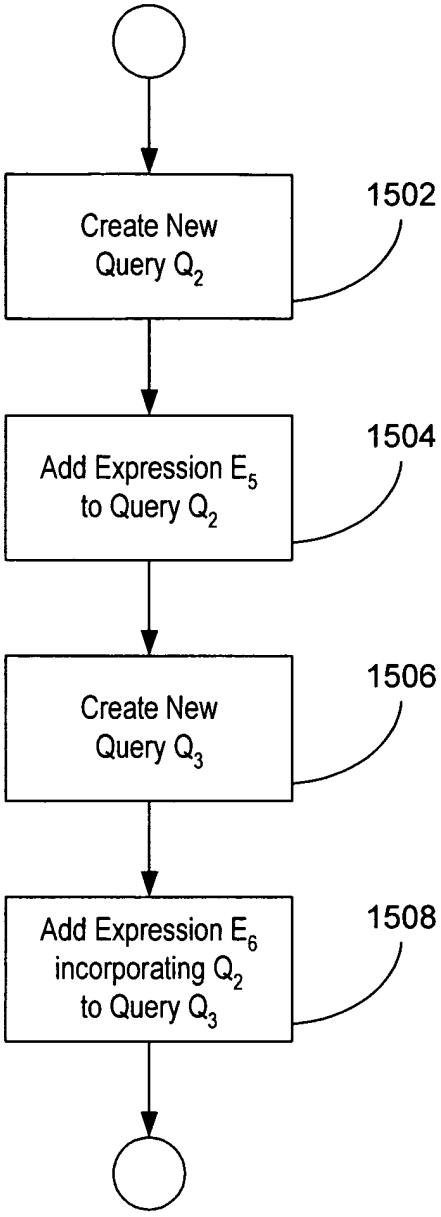
Create New Query Q_2
1502
Add Expression E_5 to Query Q_2
1504
Create New Query Q_3
1506
Add Expression E_6 incorporating Q_2 to Query Q_3
1508

FIG. 15

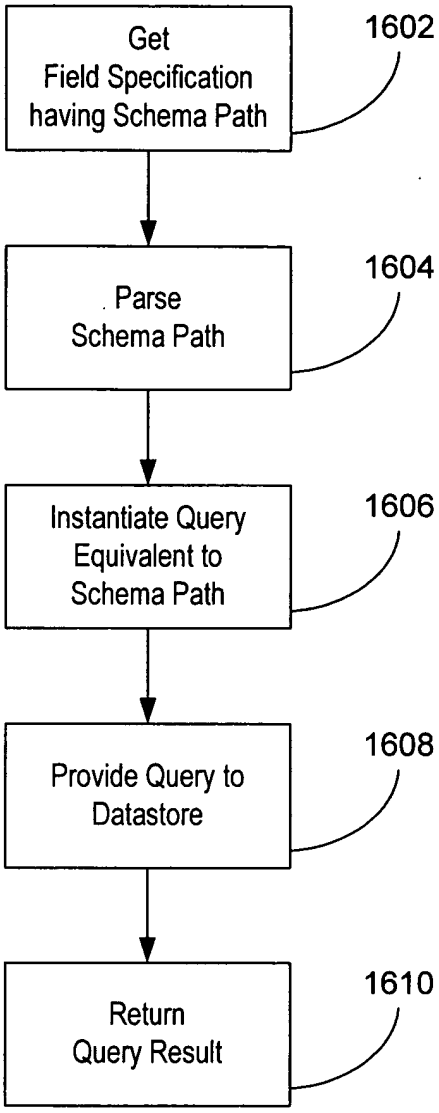
Get
Field Specification
having Schema Path
1602
Parse
Schema Path
1604
Instantiate Query
Equivalent to
Schema Path
1606
Provide Query to
Datastore
1608
Return
Query Result
1610

FIG. 16